L 17336-63

ACCESSION NR: AP3004886

resolution, etc. Analysis of the results permits selecting the optimum delay time in the control channel, resolution time of the coincidence circuit, permissible loading of the spectrometer, and its block scheme. A comparison of several versions of the spectrometer showed that the best composition is a mixture of equal amounts of xylol (or phenylcyclohexane) and trimethylborate with B^{10} enriched to 80%. The resolution time of the coincidence circuit must be 1.5 microsec. Orig. art. has: 7 figures, 6 formulas, and 2 tables.

ASSOCIATION: none

SUBMITTED: 31Aug62 DATE ACQ: 28Aug63 ENCL: 00

SUB CODE: NS NO REF SOV: 005 OTHER: 007

Card 2/2

YEGOROV, Yu.A.

Simple circuit for a device for testing electromagnetic relays.
Priborostroenie no.10:27 O '63. (MIRA 16:11)

EWP(j)/EPF(c)/EPF(n)-2/EWT(m)/BDS AFFTC/ASD/SSD Pc-4/
Pr-4/Pu-4 RM/WW/DM

L 12860-63
ACCESSION NR: AP3003970 S/0089/63/015/001/0017/0020 78

AUTHOR: Ayayev, V. N.; Vasil'yev, G. A.; Veselkin, A. P.; Yegorov, Yu. A.; Orlov, Yu. V; Pankrat'yev, Yu. V.

TITLE: Reactor neutron flux attenuation in polyethylene

SOURCE: Atomnaya energiya, v. 15, no. 1, 1963, 17-20

TOPIC TAGS: neutron attenuation, polyethylene, polyethylene neutron attenuation, slow neutron, fast neutron, neutron relaxation length, biological shielding, water-water reactor

ABSTRACT: The attenuation of fast and slow neutron fluxes by polyethylene has been investigated experimentally in a water-water research reactor. A polyethylene 680 x 680 x 1000-mm prism consisting of square plates 10 and 20 mm thick was irradiated by placement in a recess in the heavy concrete shielding of the reactor. The slow neutron fluxes were measured by the use of resonant indicators (indium, iodine) and a BF_3 counter. The fast neutron distribution was measured by means of threshold indicators P(n,p), Al(n,p), and Al(n,α) and a scintillation counter with ZnS(Ag). During measurements the plane indicators were inserted into gaps between the polyethylene plates, and

Card 1/2

L 12860-63

ACCESSION NR: AP3003970

O

the cylindrical indicators were placed into 20 x 20 x 100-mm holes cut in the plates. The results obtained are shown in Figs. 1 and 2 of the Enclosure, along with theoretical data obtained by the method of moments for a point neutron source. A comparison of neutron relaxation length in polyethylene (density, 0.92 g/cm^3) and in water under identical conditions showed that the relaxation length in polyethylene is 12—17% shorter than that in water. "The authors thank the reactor operating personnel and laboratory technicians who took part in the experiment." Orig. art. has: 2 figures and 4 tables.

ASSOCIATION: none

SUBMITTED: 25Aug63 DATE ACQ: 08Aug63 ENCL: 01

SUB CODE: NS NO REF SOV: 004 OTHER: 004

Card 2/3 2

L 11129-63 EWP(j)/EPF(n)-2/EWT(m)/BPS AFFTC/ASD/AFWL/SSD
Pc-4/Pu-4 RM/DM
ACCESSION NR: AP3003971 S/0089/63/015/001/0020/0022 702

AUTHOR: Avayev, V. N.; Vasil'yev, G. A.; Veselkin, A. P.; Yegorov, Yu. A.; Orlov, Yu. V.; Pankrat'yev, Yu. V.

TITLE: Spectra of reactor fast neutrons passed through polyethylene 19 16 15

SOURCE: Atomnaya energiya, v. 15, no. 1, 1963, 20-22

TOPIC TAGS: fast neutron spectra, polyethylene, reactor shielding

ABSTRACT: Measurements were made of the spectra of fast neutrons after passage through a layer of polyethylene plates (680 x 680 x 10 mm) installed in a recess of the shielding of a water-water reactor. The thickness of the polyethylene layer was increased on the side facing of the spectrometer detectors. The measurements were made by means of a fast-neutron spectrometer with a single detector in which γ-background discrimination was achieved by means of a space charge between the last dynode and anode of the photomultiplier. The fast-neutron spectra were determined from the amplitude distribution of pulses produced by recoil protons in the stilbene crystal of the detector. The spectra were corrected for the effect of secondary neutron scattering in the crystal and for partial leakage of recoil protons from the crystal. The results obtained

Card 1/3

L 11129-63

ACCESSION NR: AP3003971

are shown in Fig. 1 of the Enclosure along with the results calculated by the method of moments (shown by the solid line). The measured spectra were found to be in good agreement with theoretical results for all thicknesses of the polyethylene layer at $E_n > 3$Mev. At $E_n < 3$Mev a divergence between the experimental and calculated results was noted. However, the tendency for a change in spectra with an increase in layer thickness in this energy range was the same for both calculated and experimental spectra. At neutron energies from 3 to 4 Mev and polyethylene thicknesses greater than 20 g/cm^2, the curve of the measured spectra showed a sharper dip than that of the calculated spectra. This is probably due to some inaccuracy in selecting or averaging the cross sections during calculation. The sharper dip in the curve was also noted in neutron spectra measured in water. "The authors thank their coworkers who serviced the reactor and laboratory assistants who assisted in the carrying out of experiments." Orig. art. has: 1 figure.

ASSOCIATION: none

SUBMITTED: 25Aug62 DATE ACQ: 08Aug63 ENCL: 01

SUB CODE: NS NO REF SOV: 003 OTHER: 002

Card 2/3

ACCESSION NR: AT4019047 S/0000/63/000/000/0190/0192

AUTHOR: Yegorov, Yu. A.

TITLE: Deformation of the spectrum of fast neutrons in concrete and water

SOURCE: Voprosy* fiziki zashchity* reaktorov; sbornik statey (Problems in physics of reactor shielding; collection of articles). Moscow, Gosatomizdat, 1963, 190-192

TOPIC TAGS: nuclear reactor, reactor shielding, concrete shielding, water shielding, neutron, neutron spectrum, neutron spectrum deformation

ABSTRACT: The author discusses measurements of the spectral deformation of the fast neutrons of a nuclear reactor as they pass through thin layers of concrete and water, carried out in 1955 on the nuclear reactor of the AN SSSR. The spectra were measured by means of a fast-neutron scintillation spectrometer with two sensors. The reactor neutrons were removed through the lateral experimental channel of the reactor and passed through a 1-meter-thick graphite reflector and 16-millimeter-thick steel plate before reaching the spectrometer. Spectra were measured in an energy range of 2.1 - 3.6 Mev. The spectrometer was calibrated by the measurement of the α- and β-spectra of several radioactive radiation

Card 1/5

ACCESSION NR: AT4019047

sources. The transition from the energy of the α- and β-particles to the proton energy was made on the basis of the information contained in Taylor's paper (Taylor G. et al. Phys. Rev., 84, 1034 (1951)). The spectrum of the fast neutrons behind the reflector of the reactor has a maximum at an energy of 2.35 Mev (See Figure 1, curve 1 in the Enclosure); the number of neutrons at this energy level is approximately 40 times greater than the number of neutrons at the maximum energy. The fast-neutron spectrum behind the reflector differs in form from the spectrum of the fission neutrons. The spectrum behind the reflector becomes monochromatic around the 2.35-Mev energy level. The results of the measurement of the spectra of neutrons passing through thin layers of concrete are shown in Figure 1. Curve 2 was plotted for a concrete layer 5 cm thick; all the other curves were plotted for a 2.5-cm increment in the thickness of the layer. It will be observed that the appearance of the spectra is not very different from the spectrum of fast neutrons behind the reflector. Approximately the same change in the fast-neutron spectra is noted as the neutrons pass through water layers of small thickness (See Figure 2. in the Enclosure). In this case, however, the change in spectral form occurs somewhat more rapidly than with the neutrons passing through concrete. Thus, with the thickness of the water layer at 20 cm, the spectral maximum of the neutrons occurs at an energy level of

Card 2/5

ACCESSION NR: AT4019047

2.15 Mev. As the thickness of the water layer is increased, the boundary energy of the neutron spectrum decreases. Orig. art. has: 2 figures.

ASSOCIATION: none

SUBMITTED: 14 Aug63 DATE ACQ: 27Feb64 ENCL: 02

SUB CODE: NP NO REF SOV: 003 OTHER: 003

Card 1 3/5

AT ACCESSION NR. AT4019047

ENCLOSURE: 01

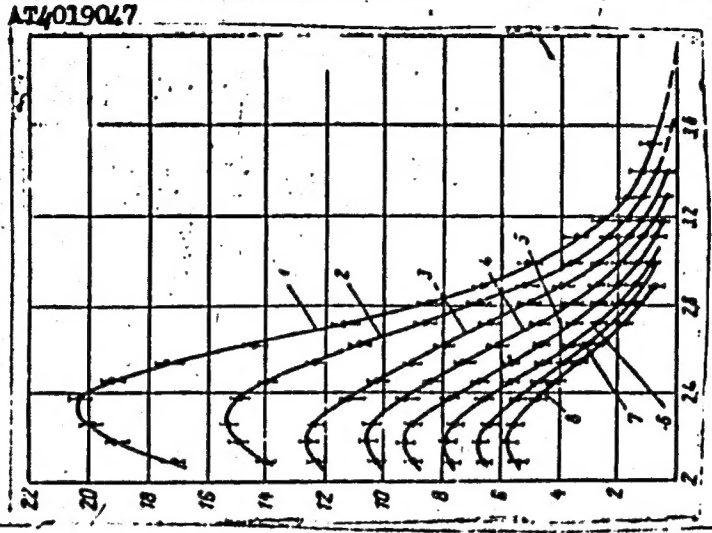
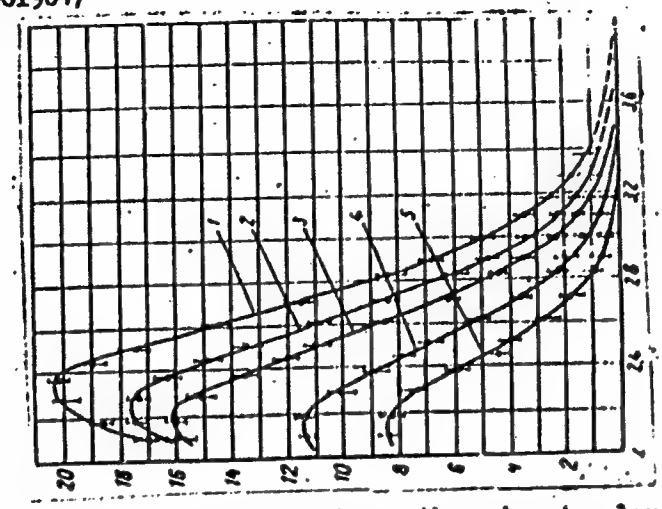


Figure 1. Spectra of the passage of fast neutrons through concrete layers of various thickness: 1 - spectrum behind the reactor reflector; 2 - 5 cm; 3 - 7.5 cm; 4 - 10 cm; 5 - 12.5 cm; 6 - 15 cm; 7 - 17.5 cm and 8 - 20 cm (NOTE: Legend to left side of figure reads: "number of neutrons, relative units"; legend beneath figure reads: "neutron energy in megaelectronvolts")

Card 4/5

ACCESSION NR: AT4019047

ENCLOSURE: 02



Spectra of the passage of fast neutrons through water layers of various thickness: 1 - spectrum behind the reactor reflector; 2 - 2.5 cm; 3 - 5 cm; 4 - 10 cm; 5 - 20 cm (NOTE: Legend to left side of figure reads: "number of neutrons, relative units"; legend beneath figure reads: "Neutron energy in megaelectronvolts!")

Card 5/5

ACCESSION NR: AT4019056 S/0000/63/000/000/0229/0234

AUTHOR: Veselkin, A. P.; Yegorov, Yu. A.; Panov, Ye. A.

TITLE: The passage of Gamma-radiation through a flat slit in shielding

SOURCE: Voprosy* fiziki zashchity* reaktorov; sbornik statey (Problems in physics of reactor shielding; collection of articles). Moscow, Gosatomizdat, 1963, 229-234

TOPIC TAGS: nuclear reactor, reactor shielding, Gamma ray propagation, Gamma ray attenuation, radiation shielding, shielding structure, lead shielding, steel shielding, plexiglass shielding

ABSTRACT: The authors studied the weakening effects exerted on radiation shielding by slits and discontinuities (heterogeneities), noting that existing formulas and techniques for computing the passage of radiation through slits and vacuums are applicable only if certain accepted limitations are fulfilled and in no case encompass the entire variety of possible slit and vacuum forms. As a source of γ-radiation a linear isotropic Co^{60} source was employed, which was simulated by the forward movement of an isotropic point source (See Fig. 1. in the Enclosure). The dose was measured by a scintillation γ-dosimeter. During

Card 1/5

ACCESSION NR: AT4019056

the experiment, the dose intensity was measured over a length of 160 mm along the shielding in a direction perpendicular to the slit. The authors investigated the dependence of the dose intensity behind a slitted shielding on the properties of the material used to fill the slit as well as on the properties of the materials of the shielding itself. As shielding materials, lead and steel were selected, while steel, titanium, aluminum, carbon (graphite with a density of 1.65 g/cm^3) and organic glass (plexiglass) were used to fill the slit. In all measurements, the thickness of the shielding was 120 mm and the height of the slit - 20 mm. As expected, the intensity of the dose behind the shielding rises sharply as the specific gravity of the material filling the slit decreases. Thus, for example, when steel is replaced by aluminum, the dosage intensity opposite the center of the slit increases by a factor of 6.5. Explanations for this fact are advanced, and the concept of the specific dose (that is, the dose per unit length behind the shielding — $D_1 = \frac{D_s}{l}$, where D_s is the integral value of the dose of gamma-radiation behind a slotted shielding; and l is the distance along the shielding within which the dose was measured) is introduced in order to shed light on certain observed laws. A graph is presented which shows a comparison of the degrees of weakening for different

Card 2/5

ACCESSION NR: AT4019056

materials used to fill the slit (See Fig. 2. in the Enclosure). The ordinate shows the ratio D_1/D (D is the specific dosage behind a continuous or unbroken shielding), while the density of the material filling the slit (g/cm^3) is indicated along the abscissa. The result permits a determination of the degree to which the shielding is weakened by the presence of a slit filled by any material, provided the dosage behind a continuous (unbroken) shielding (or behind a slitted shielding for any single slit material) is known. This method and certain variations of its application are analyzed. Orig. art. has: 1 formula and 8 figures.

ASSOCIATION: none

SUBMITTED: 14Aug63 DATE ACQ: 27Feb64 ENCL: 02

SUB CODE: NP NO REF SOV: 001 OTHER: 003

Card 3/5

ACCESSION NR: AT4019056

ENCLOSURE: 01

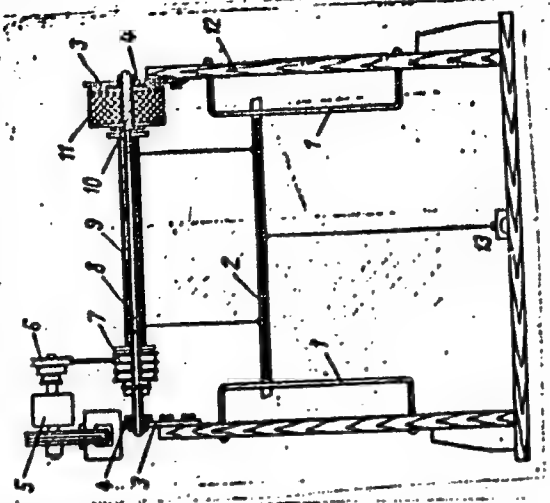


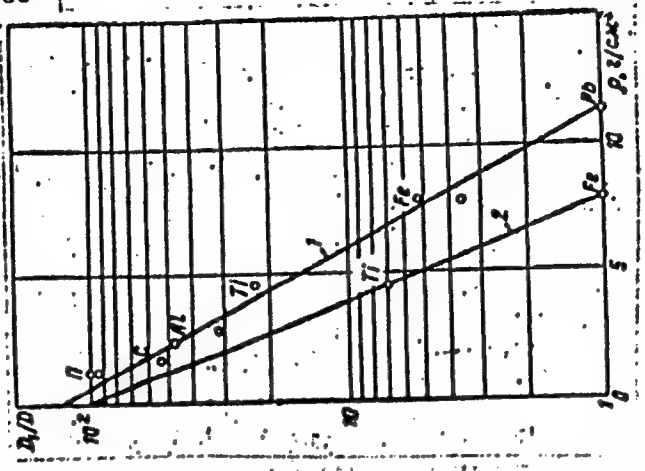
Figure 1.

Schematic drawing of the device for moving the source: 1 — guides; 2 — rod with source; 3 — brackets; 4 — bearings; 5 — SD-2 motor; 6 & 7 — pulleys; 8 — shaft; 9 — coil; 10 — armature of electromagnetic sleeve; 11 — electromagnet; 12 — stand; 13 — switch

Card 4/5

ACCESSION NR: AT4019056

ENCLOSURE: 02



Degree of weakening D_1/D of shielding by the presence of a slit as a function of the specific gravity of the material used to fill the slit: 1 — lead shielding; 2 — steel shielding; 0 – calculated values for steel, concrete and water; π — plexiglass; C — graphite ($\rho = 1.6$ g/cm^3)

Card 5/5

ACCESSION NR: AT4019060 S/0000/63/000/000/0260/0270

AUTHOR: Avayev, V. N.; Vasil'yev, G. A.; Yegorov, Yu. A.; Kucheryayev, V. A.; Orlov, Yu. V.; Pankrat'yev, Yu. V.; Panov, Yo. A

TITLE: Counters and dosimeters for the study of shielding and shielding properties of materials

SOURCE: Voprosy* fiziki zashchity* reaktorov; sbornik statey (Problems in physics of reactor shielding, collection of articles). Moscow, Gosatomizdat, 1963, 260-270

TOPIC TAGS: counter, scintillation counter, dosimeter, shielding, reactor shielding, nuclear reactor, gamma ray, neutron

ABSTRACT: In the study of the shielding properties of different materials and their combinations, it is important to know the following parameters: coefficients of attenuation of γ-ray and neutron streams of different energies; coefficients of attenuation of the power level of γ-radiation and fast neutorns; yield and spectrum of captured γ-radiation; activation of materials in a neutrons flux; and deformation of the γ-ray and neutron spectra in their passage through the material. Since existing equipment is insufficient for shielding studies, the authors built and tested a number of scintillation counters and dosimeters.

Card 1/3

ACCESSION NR: AT4019060

Among those described are a scintillation counter and spectrometer for the study of the attenuation of γ-ray flux, consisting of a FEU-11B photomultiplier with an NaI(T1) crystal (diameter and height 40 mm) mounted in a housing lined with aluminum foil, and a scintillation neutron counter consisting of a FEU-11B photomultiplier with plastic scintillator of ZnS(Ag) + lucite (diameter 30, height 10 mm). For neutron energies $\geq$ 2 MeV, the γ-ray background is calibrated with a Co^{60} source and eliminated by the proper bias in the analyzer. A similar neutron counter can be used as a monitor. A light guide in conjunction with a smaller counter is used when the opening in the shielding is too small. This light guide is made of organic glass (length 60, diameter 10 mm) and is equipped with a light collector (Tove, P. A. Rev. of Sci. Inst. 27, 143 (1956)). For neutron energies between 1 and 10 Mev, a stilbene crystal is used (diameter 30, height 20 mm) equipped with the γ-discrimination arrangement described by H. W. Broch (Rev. Sci Instr. 31, 1063 (1960)). The detection efficiency for neutrons between 1 and 10 Mev is 10 - 2%. For thermal neutron detection, a FEU-29 or FEU-31 photomultiplier with an Li_2O- $3SiO_2$ glass scintillator is used. Detection is based on the reaction $Li^6 + n \rightarrow \alpha + H^3$. The sensitivity of these counters to γ rays is calibrated by Zn^{65} to Co^{60} sources. All-wave-length neutron counters are constructed as gas counters (type SNM-5) filled with BF_3 and enclosed in paraffin, which is lined on the outside with cadmium. Dosimeters for fast neutrons are

Card 2/3

ACCESSION NR: AT4019060

made from plastic scintillators (polystyrene + terphenyl + ROROR) attached to a FEU-25 photomultiplier. The photomultiplier current is integrated and amplified by a direct current amplifier. The maximum sensitivity of this dosimeter is 0.2 μ F/sec per division. In order to eliminate γ-ray background, the measurements are made simultaneously with a γ-ray dosimeter which is a combination of the plastic and inorganic scintillators. A crystal of CsI(T1) (volume 1.5 cm^3) is mounted on the axis of the plastic crystal (polystyrene + terphenyl + ROROR). Finally, a universal stand for detection and power supply is described. "The authors thank V. M. Isakov, D. I. Chupy*rin, A. I. Vasil'yev, V.N. Kozy*rev and Yu. G. Anisimov for taking part in the construction and adjustment of the apparatus." Orig. art. has: 9 figures and 1 table.

ASSOCIATION: none

SUBMITTED: 14Aug63 DATE ACQ: 27Feb64 ENCL: 00

SUB CODE: NP NO REF SOV: 015 OTHER: 004

Card 3/3

ACCESSION NR: AT4019061 S/0000/63/000/000/0270/0277

AUTHOR: Avayev, V. N.; Voskresensky, Ye. V.; Yegorov, Yu. A.; Orlov, Yu. V.

TITLE: Use of radioactive indicators in the investigation of shielding

SOURCE: Vorposy* fiziki zashchity* reaktorov; sbornik statey (Problems in physics of reactor shielding; collection of articles). Moscow, Gosatomizdat, 1963, 270-277

TOPIC TAGS: nuclear reactor, reactor shielding, shielding evaluation, radioactive indicator neutron detector, scintillation counter, Gamma ray, neutron

ABSTRACT: The authors suggest that the efficiency of radioactive indicators such as Al^{27}, Mn^{55}, In^{115}, I^{127} or Au^{197} can be increased by an improved method for detecting and counting the γ-rays. The advantages of using radioactive indicators as neutron detectors in the study of shielding are: (1) the ability to detect neutrons which are either above certain energy levels (threshold detectors) or within a certain energy interval (resonance detectors); (2) the smallness of the indicators (can be used without disturbing the distribution of the neutron flux); (3) insensitivity to γ radiation; and (4) ability to be used to estimate the neutron energy spectrum. The disadvantages are their small effective cross section and the relative insensitivity of the gas counters used in conjunction with the indicators to measure the γ radiation. In the present paper, in order to increase detection efficiency, a 4π

Card 1/3

scintillation counter was used for cylindrically shaped radioactive indicators and a 2 π scintillation counter for planar indicators. 4 π scintillation counters consist of two photomultipliers of the FEU-43 type, each provided with a CsI(Tl) crystal 60 mm in diameter and 30 mm in height. Both crystals are packed in one container and divided by an aluminum foil. The mounting of the photomultiplier and associated equipment is shown. The γ-ray efficiency of the 4 π counter was near 100%. This allows the use of very small indicators (8 mm in diameter and 5-50 mm in height) for cylindrical specimens, the wall thickness of which can be 0.1-0.3 mm. Cylindrical indicators are mounted in a lucite tube (9 mm in diam.) with a wall thickness of 0.5 mm. With the use of cadmium or boron-cadmium filters, the total diameter is between 15 and 32 mm. Planar indicators are deposited on a lucite substrate, 1 mm thick. The dimensions of the indicators are from 5 x 5 to 40 x 40 mm with a thickness of 0.1-4 mm. FEU-41 multipliers are used with NaI(Tl) crystals (diameter and height 40 mm) for planar indicators. In order to eliminate the γ-ray background, a single-channel analysis system was used. The best technique is to count not the integral number of pulses, but the most intense γ line or group of γ lines, characteristic for a given indicator. The γ-ray energies and characteristic reactions for the most common indicators are tabulated. This method improves signal to noise ratio and eliminates the necessity of very pure materials. An example of how the use of this method enables one to eliminate the influence of

ACCESSION NR: AT4019061

thermal and epithermal neutrons in the detection of fast neutrons by a radioaluminum indicator is shown. "The authors thank D. I. Chupy*rin for assembling and adjusting the electronic apparatus and N. Ye. Vasin for designing the 4π-counter." Orig. art. has: 6 figures and 1 table.

ASSOCIATION: none

SUBMITTED: 14Aug63 DATE ACQ: 27Feb64 ENCL: 00

SUB CODE: NP NO REF SOV: 004 OTHER: 002

Card 3/3

ACCESSION NR: AT4019063 S/0000/63/000/000/0281/0289

AUTHOR: Avayev, V. N.; Yegorov, Yu. A.; Orlov, Yu. V.

TITLE: Computation of the characteristics of gamma-radiation and fast neutron spectrometers by the random test method

SOURCE: Voprosy* fiziki zashchity* reaktorov; sbornik statey (Problems in physics of reactor shielding; collection of articles). Moscow, Gosatomizdat, 1963, 281-289

TOPIC TAGS: nuclear reactor, reactor shielding, radiation spectrum, neutron scattering, radiation dosimetry, neutron, Gamma ray, scintillation spectrometer, crystal spectrometer, random test method, Monte Carlo method

ABSTRACT: The authors note that the most convenient devices for the study of continuous γ-radiation and neutron spectra are γ-radiation scintillation spectrometers with complete absorption of the γ-quanta energy, that is, spectrometers with a large-size scintillator, and also fast-neutron spectrometers with one sensor. The relative advantages and disadvantages of these types are discussed and the preference is accorded to spectrometers with large crystals. Processing of the test results obtained with these spectrometers is possible provided one knows the forms of the instrument lines of the monochromatic radiations at a number of energy values and the dependence of the efficiency on the energy of the gamma-

Card 1/4

ACCESSION NR: AT4019063

radiation and neutrons. It is pointed out that for a scintillation gamma-spectrometer in a gamma-quanta energy range of approximately 100 kev to 3 Mev, the form of the instrument line and the efficiency can be determined experimentally by measuring the gamma-spectra of radioactive sources of γ-radiation (Ce^{141}, Hg^{203}, Cs^{137}, Zr^{95}, Zn^{65}, Na^{24}, and others), but that for higher gamma-radiation energy levels and fast-neutron energies the experimental determination of the efficiency and the form of the line involve great difficulties. These values may be calculated in the case of both spectrometer types by the random test method (otherwise known as the Monte Carlo method). In the present article, a system for spectrometer characteristic computation by this method is considered. For the sake of simplifying the exposition, in both cases a plane problem is solved; that is, the authors consider that all processes of scattering and absorption occur in the xy plane. The authors note that the solution of the spatial problem does not differ essentially from that of the plane problem. The paper is in two sections: In the first-the problem of the computation of the characteristics of a gamma-spectrometer is discussed; in the second - the computation of the characteristics of a neutron spectrometer. In the first case, the movement of the γ-quanta of the source in the scintillator and the movement of the products of its scattering are sequentially examined until either they are absorbed in the crystal or fall outside its limits. For each γ-quantum of the source, a determination is made of

Card 2/4

ACCESSION NR: AT4019063

the portion of the energy which is expended on ionization as a result of secondary processes. This computation is repeated for a large number of source -quanta. The results thus obtained are used to construct rated spectra - histograms (frequency polygons) which define the resolution of the spectrometer (without consideration of the physical resolution determined by the resolving power of the scintillator and photomultiplier). A comparison of the number of "absorbed" gamma-quanta with the number of those considered determines the efficiency of the spectrometer. In the second section of the article, a general description of the physical composition and operational principle of this type of instrument is given. The problem of the time lag between the moment of formation of the proton pulse and the pulse from the alpha-particle is discussed. The determination of the efficiency and resolution of a fast-neutron scintillation spectrometer, and also a rational selection of the delay time, requires the solution of a problem, formulated by the authors in the following terms: incident to and along the axis of a cylindrical scintillator, the composition of which contains hydrogen, carbon, oxygen and boron atoms, is a stream of neutrons having an energy E_0; it is necessary to find the time t_0 from the moment of the first scattering in the hydrogen to the moment of the capture of the neutron by the boron nucleus, to determine what part of its energy the neutron has lost as a result of scattering on the hydrogen nuclei, and to find the ratio n_b/n_0, where n_0 is the stream of source neutrons, and n_b is the

Card3/4

ACCESSION NR: AT4019063

number of neutrons captured by the boron after scattering in the hydrogen. Since the scattering sections of the neutrons by the hydrogen and carbon nuclei are large in comparison with the capture sections, and the capture section of the boron nuclei is great in comparison with the scattering section, it may be assumed that the hydrogen and carbon nuclei only scatter the neutrons, while the boron nuclei only absorb them. At the time, scattering and absorption by the oxygen nuclei may be disregarded, since the full section of the oxygen is small in comparison with the sections of hydrogen, carbon and boron. In both sections of the paper, the authors discuss the possible use of electronic computers in carrying out the calculations by the formulas derived. "The authors express thanks to V. N. Ignatenko for carrying out the calculations". Orig. art. has: 9 figures and 17 formulas.

ASSOCIATION: None

SUBMITTED: 14Aug63 DATE ACQ: 27Feb64 ENCL: 00

SUB CODE: NP NO REF SOV: 003 OTHER: 005

Card 4/4

ACCESSION NR: AT4018064 S/0000/63/000/000/0289/0303

AUTHOR: Avayev, V. N., Yegorov, Yu. A., Orlov, Yu. V., Frolov, A. S., Chentsov, N.N.

TITLE: Computation and analysis of the characteristics of a spectrometer with a boron-hydrogen scintillator

SOURCE: Voprosy* fiziki zashchity* reaktorov; sbornik statey (Problems in physics of reactor shielding; collection of articles). Moscow, Gosatomizdat, 1963, 289-303

TOPIC TAGS: nuclear reactor, reactor shielding, spectrometer efficiency, xylene borate scintillator, phenylcyclohexane borate scintillator, radiation dosimetry, scintillation spectrometer, boron hydrogen scintillator, neutron energy, yield nucleus method, twin sensor spectrometer, neutron spectrometer

ABSTRACT: Among the methods for determining the energy of fast neutrons, the authors call particular attention to the yield nucleus method, noting that a special position in this method is occupied by scintillation spectrometers. Twin-sensor fast-neutron spectrometers are described and their operational principles are briefly analyzed. It is pointed out that fast-neutron spectrometers with two sensors can operate only with collimation of the neutron stream. The limitations imposed by this circumstance, particularly with reference to the study of fast-neutron spectra behind shielding, are noted. The subject of spectrometers

Card 1/5

ACCESSION NR: AT4019064

with one hydrogen-containing sensor is introduced. The discrimination of the gamma-background in these spectrometers is accomplished through the difference in the glow time of the scintillator when excited by protons and electrons. It is further noted that spectrometers with a single hydrogen-containing sensor are capable of operating without a collimation device. The lower boundary of the measured neutron energy levels is normally not less than 0.7 Mev. While such instruments have been used for a wide variety of test purposes, the author observes that spectrometers with a hydrogen-containing sensor cannot be used for measurements against a high gamma-background. The single-sensor scintillation spectrometer, the scintillator of which contains hydrogen and boron, and which was proposed by Marshall (B[illegible]ner. Phys. Soc., 27, 11 (1952)), is described in detail and its advantages ar[illegible]d. It is noted, however, that the data necessary to permit the actual construction of su[illegible] a spectrometer are lacking inthe available technical literature. The following values i[illegible] particular, are unknown: 1) the efficiency of the spectrometer as a function of the ene[illegible]gy of the neutrons; 2) the efficiency as a function of the volume of the scintillator and the r[illegible]o of the hydrogen and boron concentrations in it; 3) the time distribution of the pulses from he alpha-particles (with the time read from the moment of the first scattering of the neutron); 4) the energy resolution of the spectrometer as a function of the energy of the neutrons. Noting that attempts have been made to supply this lacking information manually by means of the Monte Carlo method, the results of which have made it

Card 2/5

ACCESSION NR: AT4019064

possible to draw certain useful conclusions leading to an initiation of work on the design of a spectrometer, the author calls attention to the failure of the manual method of calculation to provide a complete picture of the required characteristics and the great amount of time such computation techniques necessarily consume. The present article, therefore, reports detailed computations of the characteristics of a boron-hydrogen scintillation-type spectrometer, conducted with the aid of an electronic computer. In individual sections of the paper the author discusses the formulation of the problem, the actual computation of the spectrometer characteristics, the fundamental block-diagram of the program used to carry out the spectrometer characteristic computation described in the article and, finally, an analysis of the results of the computation, on the basis of which all the laws characteristic of a spectrometer with a boron-hydrogen scintillator are explained. The author learned, among other things, that: 1) Spectrometer efficiency as a function of the resolving time of the coincidence circuit has a maximum value, the position of which (on the various graphs and curves plotted in the article) is different for scintillators of different dimensions and composition; 2) Spectrometer efficiency is directly proportional to the concentration of boron nuclei: 3) The efficiency maximum is more distinctly expressed for scintillators with a higher concentration of boron nuclei; 4) The efficiency maximum is less clearly expressed for large volume scintillators: 5) The efficiency maximum is less clearly expressed for a cylindrical scintillator than for a spherical one with identical diameters of the sphere and

Card 3/5

ACCESSION NR: AT4019064

cylinder base, and is shifted in the direction of greater coincidence circuit resolving time. The results of the computation and analysis of the characteristics of a scintillation spectrometer with a boron-hydrogen scintillator showed that, of all the compositions, considered, the most suitable is a mixture of equal parts of xylene (dimethylbenzene),or phenylcyclohexane with trimethyl borate with boron B^{10} enriched to 80%, poured into a vessel 80 mm in both diameter and height. The resolving time of the coincidence circuit in this case should be equal to approximately 1.5 microseconds. On the basis of the study, the block-diagram of the spectrometer shown in Figure 1 of the Enclosure was adopted for development. In order to reduce the number of random coincidences, a single-channel pulse amplitude analyzer was introduced into the spectrometer control circuit. Orig. art. has: 11 figures and 13 formulas.

ASSOCIATION: None

SUBMITTED: 14Aug63 DATE ACQ: 27Feb64 ENCL: 01

SUB CODE: NP, OP NO REF SOV: 010 OTHER: 008

Card 4/5

ACCESSION NR: AT4019064

ENCLOSURE: 01

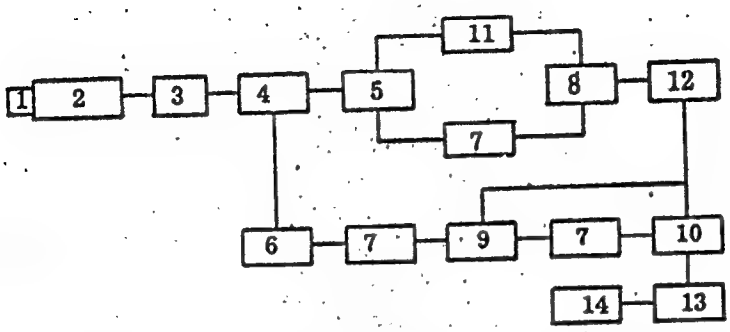


Fig. 1 - Proposed block diagram of a boron-hydrogen scintillation spectrometer: 1) C - scintillator; 2) КФ - cathode follower; 3) ФЭУ - photomultiplier; 4) ПУс - preamplifier; 5) $У_с$ - amplifier; 6) ЛУс - linear amplifier; 7) ЛЗ - delay line; 8) СС - coincidence circuit; 9) БС - blocking unit; 10) Э К - electronic key; 11) ОА - single-channel pulse amplitude analyzer; 12) РО - regulating monovibrator; 13) О - limiter; 14) АА - multichannel pulse amplitude analyzer.

Card 5/5

S/0000/63/000/000/0304/0310

ACCESSION NR: AT4019065

AUTHOR: Yegorov, Yu. A.; Pankrat'yev, Yu. V.

TITLE: A single-crystal fast-neutron spectrometer for the measurement of continuous spectra

SOURCE: Voprosy* fizikl zashchity* reaktorov; sbornik statey (Problems in physics of reactor shielding; collection of articles). Moscow, Gosatomizdat, 1963, 304-310

TOPIC TAGS: nuclear reactor, reactor shielding, yield proton method, stilbene scintillator, radiation dosimetry, neutron, neutron spectrometer, single crystal spectrometer, continuous spectrum, scintillation spectrometer, organic scintillator

ABSTRACT: The authors call attention to the differences between spectrometers with a single hydrogen-containing scintillator and other high-efficiency scintillation spectrometers. It is pointed out that the possibility of discovering differences in the glow time of certain organic scintillators when they are radiated by protons and electrons and the development of methods for the discrimination of pulses caused by gamma-radiation has recently made possible a far wider application of single-crystal spectrometers for various kinds of measurements. The yield proton method is discussed as the most widely used technique for the

Card 1/5

ACCESSION NR: AT4019065

measurement of the energy values of fast neutrons in connection with the spectrometer type under consideration. Formulas are obtained for the number of yield protons for given scintillator parameters and in a given energy range. An additional formula is given whereby the correction factor for secondary scattering and yield proton energy leak (dissipation) can be calculated. A spectrometer designed for measurements in a nuclear reactor is described. Crystal thickness as influenced by the presence of an intensive gamma-background is considered in some detail. A graph illustrating the correction factor for secondary scattering and for incomplete proton energy absorption is presented. The authors claim that, depending on the neutron energy, the efficiency of the 5-mm thick stilbene crystal used in the spectrometer described varies from 37 for E_0 = 2 Mev to 1.3% for E_0 = 10 Mev. It is further claimed that no other fast-neutron scintillation spectrometer possesses such high efficiency. An FEU-33 photomultiplier is used in the single-crystal spectrometer. A discrimination circuit proposed by Brooks (Nucl. Instrum, 4, 3 (1959)) is employed to eliminate the effect of the gamma-background. A block diagram of the device used to balance this discrimination circuit is given in the article. By means of this circuit, each pulse on the oscilloscope screen is represented by a gleaming dot. A block diagram of the single-crystal fast-neutron

Card 2/5

ACCESSION NR: AT4019065

spectrometer may be seen in the Enclosure. A pulse, whose amplitude is proportional to the yield proton energy, is tapped from the photomultiplier diode and passes through the cathode follower to the linear pulse amplifier. The boosted pulse is fed through the delay line to the electronic key. For control of the operation of the spectrometer, a pulse from the output of the discrimination circuit is used which passes through the cathode follower to the amplifier, and then to the integral discriminator. This integral discriminator is at the same time a regulating mono-vibrator and is so tuned that it is triggered only by proton pulses. For pulse amplification in both spectrometer channels type USH-10 amplifiers are used. The pulse amplitude analyzer is a hundred-channel analyzer, type AI-100-1. The techniques used to check the quality of the spectrometer operation are described in the article. Control measurements indicated that operation was reliable. In the region of neutron energy values greater than 0.9 Mev, the test results lend themselves to easy processing (the tests were conducted by measuring the neutron spectra of Po + Be, Po + B sources, a nuclear reactor and the spectral deformation of a Po + Be source in water). The spectrometer was found to be practically insensitive to gamma-radiation in a stream of gamma-quanta approximately 10^4 greater than the neutron stream. "The authors wish to thank Yu. G. Anisimov for his assistance in conducting the experiments and in calibrating the spectrometer." Orig. art. has: 7 figures and 7 formulas.

Card3/5

ACCESSION NR: AT4019065

ASSOCIATION: none

SUBMITTED: 14Aug63

SUB CODE: NP

DATE ACQ: 27Feb64

NO REF SOV: 005

ENCL: 01

OTHER: 008

Card 4/5

ENCLOSURE: 01

ACCESSION NR: AT4019065

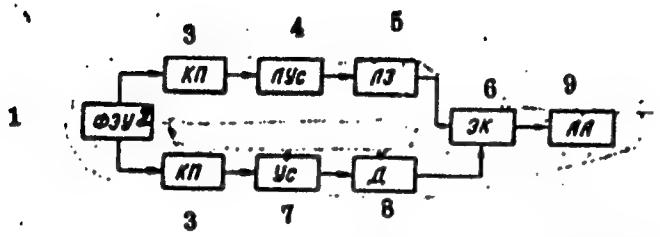


Figure 1. Block diagram of the single-crystal fast-neutron spectrometer: 1 - radiation source; 2 - spectrometer sensor with discrimination circuit; 3 - cathode follower; 4 - linear pulse amplifier; 5 - delay line; 6 - electronic key; 7 - amplifier; 8 - integral discriminator; 9 - pulse amplitude analyzer

Card 5/5

ACCESSION NR: AT4019066 S/0000/63/000/000/0310/0312

AUTHOR: Yegorov, Yu. A.; Orlov, Yu. V.; Pankrat'yev, Yu. V.

TITLE: Permissible Gamma-background in measurements by a fast neutron spectrometer with a single detector

SOURCE: Voprosy* fiziki zashchity* reaktorov; sbornik statey (Problems in physics of reactor shielding; collection of articles). Moscow, Gosatomizdat, 1963, 310-312

TOPIC TAGS: neutron spectrum, Gamma-background, fast neutron, reactor shielding, spectrometer, spectrometer discrimination, photomultiplier, neutron flux measurement

ABSTRACT: The discriminating ability of a single-detector fast neutron scintillation spectrometer against a γ-radiation background was studied by two methods: separation by an electronic circuit (Brooks, F. D. Nucl. Instrum. 4, 151 (1959)), and separation based on the spatial charge saturation in the region between the last dynode and the anode of a photomultiplier (Owen, R. B. Trans. I.R.E. PGNS 5, 198 (1958)). In both cases, an FEU-33 photomultiplier was used with a stilbene crystal (30x20 mm). The energy threshold of the spectrometer was set at 0.6 Mev and determined from the reaction $D(d,n)He^3$. A Po + Be neutron source was

Card 1/3

ACCESSION NR: AT4019066

used and Co^{60} served as a γ-radiation source. The results are given in the Enclosure, based on data obtained by the electronic circuit separation method (Fig. 1a) and the spatial charge saturation method (Fig. 1b), respectively. As seen from Fig. 1a, γ-quanta at 1.33 Mev are not registered until the intensity of γ radiation exceeds 4mc/sec. In the spatial charge saturation method, γ-quanta are registered only if the limit of 15-20 mc/sec is exceeded. It is found, however, that γ radiation with energies greater than 3 Mev is registered when the spatial charge saturation method is used in measurements on a nuclear reactor. This difficulty is avoided by increasing the energy threshold to 2.1 Mev. It is then possible to measure a fast neutron spectrum when the ratio of neutron flux to that of γ-rays is 1:2000. Orig. art. has: 2 figures.

ASSOCIATION: none

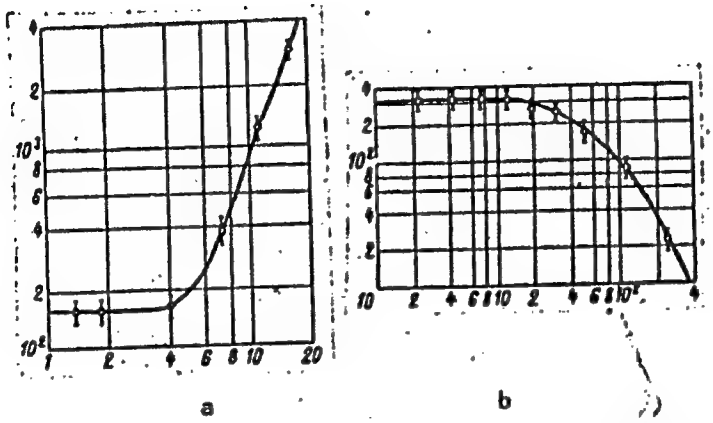
SUBMITTED: 14Aug63 DATE ACQ: 27Feb64 ENCL: 01

SUB CODE: NP NO REF SOV: 005 OTHER: 003

Card 2/3

ACCESSION NR: AT4019066

ENCLOSURE: 01



Recording characteristics of a fast neutron spectrometer with a system of discrimination based on: a) comparing the full charge count with the peak count electronically; b) the γ-background of the spatial charge. In both a and b: ordinate = relative number of counts, and abscissa = γ-radiation dose in μr/sec.

Card 3/3

L 8128-66 EWT(m)/EWP(j)/T RM

ACC NR: AP5025020 SOURCE CODE: UR/0286/65/000/016/0080/0080

AUTHORS: Muromova, R. S.; Pletneva, I. D.; Demidova, T. V.; Yegorov, Yu. A.; Pervukhina, I. V.; Shkhiyants, I. V.

ORG: none

TITLE: Method for obtaining polyamides. Class 39, No. 173929 [announced by State Scientific Research and Development Institute of the Nitrogen Industry and Products of Organic Synthesis (Gosudarstvennyy nauchno-issledovatel'skiy proyektnyy institut azotnoy promyshlennosti produktov organicheskogo sinteza)]

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 16, 1965, 80

TOPIC TAGS: polymer, polymerization, polyamide, aminocyclohexyl alkane acid, isomer

ABSTRACT: This Author Certificate presents a method for obtaining polyamides on the basis of amino-cyclohexylalkane acids. To increase the mechanical strength and stability of the polyamides and fibers derived from them, the cis-isomers of β-(3-aminocyclohexyl) propionic and γ-(3-aminocyclohexyl) butyric acids and their mixtures with other polyamide-forming compounds are used as starting materials.

SUB CODE: OC/ SUBM DATE: 22Apr63

UDC: 678.675

Card 1/1

YEGOROV, Yu.A.; YAKUBOV, N.I.; KATORZHNOV, N.D.

Manufacture of pipes with a small diameter. Khim. volok. no.4:67-68 '64. (MIRA 18:4)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut iskusstvennogo volokna.

S/C000/63/000/000/0312/0318

ACCESSION NR: AT4019067

AUTHOR: Avayev, V. N.; Yegorov, Yu. A.; Orlov, Yu. V.

TITLE: Gamma pair spectrometer

SOURCE: Voprosy* fiziki zashchity* reaktorov; sbornik statey (Problems in physics of reactor shielding; collection of articles). Moscow, Gosatomizdat, 1963, 312-318

TOPIC TAGS: nuclear reactor, reactor shielding, radiation dosimetry, spectrometer, Gamma spectrometer, Gamma pair spectrometer, scintillation pair spectrometer, electron position pair, annihilation radiation

ABSTRACT: The authors describe a scintillation-type gamma-pair spectrometer which is being successfully used to measure the deformation of the γ-spectra of a nuclear reactor in the shielding in the region of γ-quanta energies greater than 1.5 Mev and for the study of capture γ-radiation. When the energy of the gamma-quanta is absorbed by the material of the scintillator, annihilation γ-radiation is generated as a result of the formation of the electron - position pair, resulting in two γ-quanta, each with an energy of 0.51 Mev. If the dimensions of the scintillator are small, the annihilation γ-quanta leave it. In the scintillator, meanwhile, energy $E_\gamma = E_{\gamma 0} - 1.02$ Mev is absorbed. This circumstance makes it

Card 1/5

ACCESSION NR: AT4019067

possible to construct a scintillation pair spectrometer which will compare favorably with spectrometers of other types. The spectrometer circuit is so designed that only the amplitude of those pulses is measured which are caused by the absorption of γ-quanta energy resulting from the process of pair formation. For this purpose, the spectrometer sensor includes, in addition to the scintillator radiated by the γ-quanta stream of the source, two supplementary scintillators to record the annihilation γ-quanta. Further theoretical considerations are explained in the article. The advantages of a scintillation gamma pair spectrometer distinguish it favorably from γ-spectrometers of other types and particularly from single-scintillator spectrometers, even if the scintillator is large in size. The difficulties generally encountered in deciphering the results of measurements of complex γ-spectra by means of a spectrometer with a scintillator are discussed in some detail. The point is emphasized that the pair spectrometer is practically insensitive to fast neutrons. This important advantage of the scintillation pair spectrometer is particularly valuable, if the spectrometer is employed to measure γ-spectra in the presence of a neutron background - for example, in nuclear reactors. Two defects are also mentioned: 1) the efficiency of the spectrometer is not great, but in order of magnitude lies between the efficiency of a single-scintillator spectrometer and a Compton spectrometer; 2) the electronic circuitry is extremely complex. A block diagram of the scintillation gamma pair spectro-

Card 2/5

ACCESSION NR: AT4019067

meter discussed in this article may be seen in the Enclosure. The principle of operation is explained thoroughly in the article. As a central sensor, a spectrometric photomultiplier, type FEU-42, has been used, mounted on which there is a spectrometric NaI(Tl) crystal, 40 mm in both diameter and height. In the supplementary sensors, type FEU-43 photomultipliers, with CsI(Tl) crystals, 60 mm in diameter and 30 mm in height, have been used. The amplitude analyzer employed is a 100-channel analyzer, type AI-100-1, while standard single-channel analyzers, type AAD0-1, have been placed in the control channel of the spectrometer for sampling pulses of specific amplitude. Results of various tests conducted with the spectrometer are presented and evaluated in the text. In particular, a test of the sensitivity of the gamma pair spectrometer to neutrons showed the following: 1) in the energy region of γ-quanta approximately less than 2.5 Mev, some distortion of the gamma-spectrum is possible (however, not more than 10%) which can be eliminated by means of additional measurements with a 100-mm thick bismuth filter; 2) if the ratio of neutron and gamma-quanta streams is approximately equal to unity, practically no distortions of the gamma-spectrum are observed; 3) in the case of a gamma-quanta energy value above 2.5 Mev, distortions of the γ-spectrum by the neutron background are likewise not observed. A formula is given for the computation of the efficiency of the spectrometer for a quantitative estimate of the ratios in the gamma-spectrum. Orig. art. has: 7 figures.

Card 3/5

ACCESSION NR: AT4019067

ASSOCIATION: None

SUBMITTED: 14Aug63 DATE ACQ: 27Feb64 ENCL: 01

SUB CODE: NP NO REF SOV: 006 OTHER: 001

Card 4/5

ENCLOSURE: 01

ACCESSION NR: AT4019067

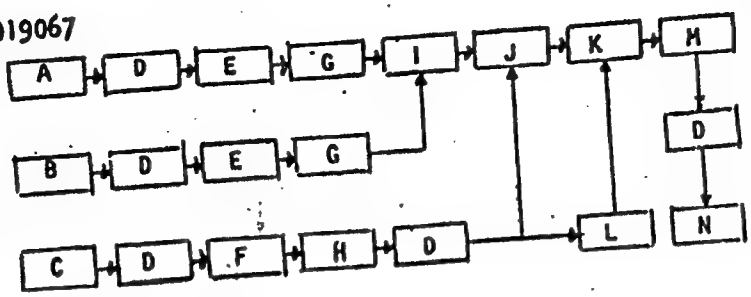


Fig. 1. Block diagram of the γ-pair spectrometer: A - central sensor of the spectrometer; B and C - supplementary lateral sensors; D - cathode followers; E - single-channel amplitude analyzers; F - linear pulse amplifier; G - shaping blocks; H and L - delay lines; I and J - coincidence circuits; K - electronic key; M - discriminator-limiter; N - 100-channel amplitude analyzer

Card 5/5

ACCESSION NR: AT4019068 S/0000/63/000/000/0319/0327

AUTHOR: Yegorov, Yu. A.; Orlov Yu. V.

TITLE: Use of a single crystal Gamma spectrometer for measurements on a nuclear reactor

SOURCE: Voprosy* fiziki zashchity* reaktorov; sbornik statey (Problems in physics of reactor shielding; collection of articles). Moscow, Gosatomazdat, 1963, 319-327

TOPIC TAGS: nuclear reactor, reactor shielding, spectrometer, Gamma spectrometer, single crystal spectrometer, Gamma ray, sodium iodide, cesium iodide

ABSTRACT: The absorption and amplitude distribution of γ-rays from various sources in the energy region from 0-10 Mev was studied with NaI(T1) and CSI(T1) single crystal spectrometers. It is pointed out that "total absorption" of γ-rays by a crystal is a relative concept due to the finite size of the crystal. Thus, the amplitude distribution of γ radiation consists of: a) a peak corresponding to the total absorption, and b) a continuous background due to the partial absorption. The degree of absorption completeness is determined by the magnitude of photofraction, i.e. the ratio of the area under the peak to that of a continuous distribution. It is found, in agreement with previous measurements (W. F. Miller

Card 1/4

ACCESSION NR: AT4019068

and W. J. Snow, Rev. Scient. Instrum. 31, 49, 1960), that the magnitude of photofraction shows an initial sharp decrease with increasing energy of the γ rays and then remains constant. The magnitude of photofraction was studied for single crystals of NaI(T1) (125 x 100 mm) and CSI(T1) (80-90 x 80-90 mm). The results are plotted in terms of the number of impulses per channel vs. the channel number. Due to the larger coefficient of absorption for γ-rays in the CSI(T1) crystal, the magnitude of photofraction was increased. The crystal efficiency vs. γ-ray energy is also plotted for these crystals. It is shown that the neutron background around a reactor can be eliminated by placing a bismuth filter of sufficient thickness for the total absorption of the γ-rays in front of the detector. In the presence of a neutron background, the number of γ-rays registered in each channel can be determined from the relation $N_\gamma = N - 1{,}3N_{Bi}$, where N is the total number registered in a channel without a filter and N_{Bi} is the number in the presence of a filter. The γ-ray spectrum from the active zone of a water reactor as measured by a CSI(T1) crystal is given in Fig. 1 of the Enclosure. The amplitude distribution spectra of γ-rays from various sources indicate that spectrometers based on NaI(T1) and CSI(T1) single crystals can conveniently be used to measure the radiation escaping from the active zone of a reactor. Orig. art. has: 11 figures and 1 formula.

ASSOCIATION: None

Card 2/4

ACCESSION NR: AT4019068

SUBMITTED: 14Aug63 DATE ACQ: 27Feb64 ENCL: 01

SUB CODE: NP NO REF SOV: 005 OTHER: 003

Card 3/4

ACCESSION NR: AT4019068

ENCLOSURE: 01

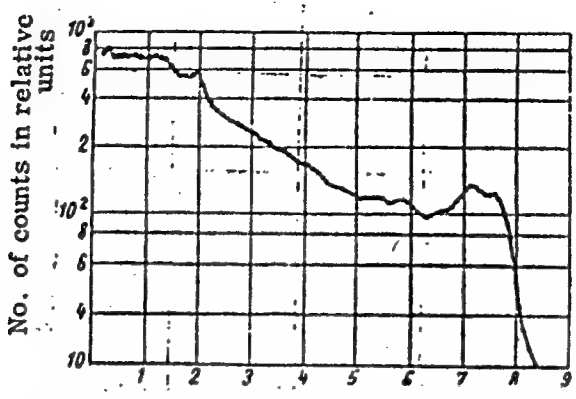


Fig. 1 - Gamma spectrum (amplitude distribution of γ-rays escaping from the active zone of a reactor through a 1-m water layer, measured by means of a CSI(T1) crystal (80 x 80 mm) spectrometer.

Card 4/4

BRODER, Dmitriy Leonidovich, doktor fiz.-mat. nauk; POPKOV, Konstantin Konstantinovich; RUBANOV, Stanislav Mikhaylovich; GLADKOV, G.A., kand. fiz.-mat. nauk, retsenzent; VESELKIN, A.P., kand. fiz.-mat. nauk, retsenzent; YEGOROV, Yu.A., kand. fiz.-mat.nauk, retsenzent; POLOGIKH, B.G., kand. fiz.-mat. nauk, re retsenzent; VLASOVA, Z.V., red.; CHISTYAKOVA, R.K., tekhn. red.

[Biological shielding for ship reactors] Biologicheskaia zashchita sudovykh reaktorov. Leningrad, Izd-vo "Sudostroenie," 1964. 410 p. (MIRA 17:4)

TOPIC TAGS: fast neutron spectrum, reactor neutron spectrum, neutron
reactor shield, biological reactor protection

ACCESSION NR: AP4041288

and tables. "The authors are grateful to A. L. Barinov for his participation in the experiments, to Yu. G. Anisimov, V. N. Kozyrev and T. V. Rucb'ev

ASSOCIATION: None

SUBMITTED: 26May63 ENCL: 00

SUB CODE: NP NO REF SOV: 008 OTHER: 008

ACCESSION NR: AP4029699 S/0089/64/016/004/0355/0356

AUTHORS: Avayev, V. N.; Yegorov, Yu. A.; Moiseyev, G. G.

TITLE: Attenuation of neutron with an energy exceeding 1.5 Mev in iron

SOURCE: Atomnaya energiya, v. 16, no. 4, 1964, 355-356

TOPIC TAGS: fast neutron, relaxation length, threshold energy, semiinfinite geometry, indium indicator, inelastic scattering, water moderated reactor, fission spectrum

ABSTRACT: A study of the penetration of fast neutrons through iron involved the determination of the relaxation lengths λ for neutrons with an energy greater than 2 Mev. It may be assumed that as the energy of the fast neutrons approaches the threshold energy (where inelastic iron-nuclei scattering begins), the relaxation lengths of the fast neutrons should increase. The spatial distribution of neutrons with an energy greater than 1.5 Mev in iron was therefore measured in a water-moderated, water-cooled research reactor in conditions of a "semiinfinite" geometry. The neutrons were recorded

Card 1/2

ACCESSION NR: AP4029699

by an indium indicator [reaction In (n, n') In^m]. The reaction threshold is somewhat reduced with the increasing thickness of the iron layer due to the attenuation of the neutrons spectrum. The absolute values of the relaxation length are somewhat higher than indicated by the calculations, which is probably due to the differences in the geometries of the experiments. The increasing relaxation length with the growing thickness of the iron layer may be explained by the accumulation of neutrons in the iron with an energy close to the energy threshold of the inelastic iron nuclei-neutron scattering. This was verified under the same conditions by measuring the spatial distribution of neutrons in iron with threshold indicators made of phosphorus ($E_{thresh.}$ = 3 Mev) and aluminum ($E_{thresh.1}$ = 5 Mev, and $E_{thresh.2}$ = 7 Mev). Orig. art. has: 1 table.

ASSOCIATION: None

SUBMITTED: 19Jul63 DATE ACQ: 01May64 ENCL: 00

SUB CODE: PH, NS NR REF SOV: 004 OTHER: 003

Card 2/2

L 2370-66 EWT(l)/FCC/EWA(h) GW

ACCESSION NR: AP5021010 UR/0203/65/005/004/0784/0786
550.388.2

39
38
6

AUTHORS: Afraymovich, E. L.; Yegorov, Yu. A.

TITLE: A device for mass input into a digital computer of coordinates of experimental curves, chosen for plots with a high error level

SOURCE: Geomagnetism i aeronomiya, v. 5, no. 4, 1965, 784-786

TOPIC TAGS: information storage, information retrieval, digital recording system, computer, ion distribution

ABSTRACT: A description is given for a means of introducing ionogram representations into a digital computing machine. The method circumvents the time-consuming task of introducing such data manually and also avoids the complexity and limitation inherent in some earlier automated methods. The proposed device consists of an optical system for projecting an image at a selected scale onto a screen equipped with a push-button control for changing photo frames. The device also features a photomechanical coding system with simple electrical circuitry. The screen is such that each point on its surface is identified in a coordinate system by means of two binary numbers. The points along an arbitrary curve within the reference system may be digitized by means of moving an indicator arrow

Card 1/2

L 2370-66

ACCESSION NR: AP5021010

along the locus of the curve. The arrow is constrained to move in the plane of the screen; the coordinates of the tip of the arrow are stored in a core memory unit whenever a contact switch is closed. The amount of digitization is at the discretion of the operator, and the interpretation of multivalued curves is also left to the judgment of the operator, thus conserving storage and removing the work of qualitative decision from the computer operation. A discussion of the comparative worth of the proposed system is given. Some areas of application mentioned are: analysis of experimental curve plots, oscillograms, particle streams, topographic charts, isoline charts, etc. The use of an intermediate information buffer would allow expansion of the device's capacity. The authors thank M. P. Rudin for his constant attention to the work. Orig. art. has: 1 figure.

ASSOCIATION: Akademiya nauk, KazSSR, sector ionosfery (Academy of Sciences, KazSSR, Ionosphere Department)

SUBMITTED: 17Sep64 ENCL: 00 SUB CODE: DP, ES

NO REF SOV: 004 OTHER: 000

BVK

Card 2/2

ACCESSION NR: AP5005802 S/0089/65/018/002/0121/0127

AUTHOR: [illegible]; Kucheryayev, V. A.; Pankrat'yev, Yu. V.

TITLE: Attenuation of reactor radiation by serpentine concrete

SOURCE: Atomnaya energiya, v. 18, no. 2, 1965, 121-127

[illegible] radiation shielding, serpentine concrete

shielding

ABSTRACT: The shielding characteristics of concrete (density, 2.2 t/m³) [illegible]

Card 1/2

ASSOCIATION: none

SUBMITTED: 21Feb64 ENCL: 00 SUB CODE: NP, MT

NO REF SOV: 012 OTHER: 001 ATD PRESS: 3189

Card 2/2

L 1159-66 EWT(m)/EPF(n)-2/EWA(h)

ACCESSION NR: AT5023145 UR/2892/65/000/004/0015/0030

AUTHOR: Avayev, V. N.; Yegorov, Yu. A.

TITLE: Method for measurement of neutron spectra in the epithermal energy region using resonance indicators

SOURCE: Moscow. Inzhenerno-fizicheskiy institut. Voprosy dozimetrii i zashchity ot izlucheniy, no. 4, 1965, 15-30

TOPIC TAGS: neutron spectrum, nuclear resonance, radiation dosimetry, cobalt, aluminum, tungsten, indium, gold

ABSTRACT: In the present work, 13 indicators were selected making possible a calculation of the contribution of the 1/v neutron spectra in the energy interval from 0.46 electron volts to 6 thousand electron volts. There is considered the possibility of determining unknown spectra by comparison with the 1/E spectrum. The absolute values of the neutron flux are found by measurements with gold indicators whose activity is determined absolutely. The article gives a mathematical description of a method for measuring the neutron spectrum, taking into

Card 1/3

L 1159-66
ACCESSION NR: AT5023145

account the 1/v contribution. It is claimed that the method is simpler than the three indicator method, and that it can be employed in biological shielding studies. Characteristics of the indicators used are given in tabular form. Experimental results show that, for indicators made of cobalt, aluminum, tungsten, indium, and gold, the contributions of secondary resonances to total activity are small. For all other indicators, the contributions are considerable and must be taken into account in calculations. Determinations of the form of a unknown spectrum from measurements of the activity of resonance indicators is carried out by the method of successive approximations. Experiments were also made on applying the method of resonance indicators to determine the neutron spectrum in strongly absorbing media. Values obtained for the neutron flux are stated to be in good agreement with calculated values. The described method for determination of the form of the spectrum of epithermal neutrons is claimed to be applicable over the energy interval from 0.46 electron volts to 6 thousand electron volts (when the flux with E=0.46 electron volts in the spectrum being investigated is 30-40 times less than in the 1/E spectrum) and in the interval from 1.46 electron volts to 6 thousand electron volts (when the flux with E = 1.46 electron volts and the 1/E

Card 2/3

L 1159-66
ACCESSION NR: AT5023145

6

spectra differ by 10^3-10^4 times). "The authors express their thanks to A. I. Vasil'yev and G. G. Moiseyev for help in carrying out the experiments."
Orig. art. has: 11 formulas, 1 figure and 3 tables

ASSOCIATION: None

SUBMITTED: 00 ENCL: 00 SUB CODE: NP

NR REF SOV: 005 OTHER: 005

Card 3/3

L 28932-66 EPF(n)-2/EWT(m)/ETC(f)/EWG(m)

ACC NR: AP5026441 SOURCE CODE: UR/0089/65/019/004/0354/0359

28
B

AUTHOR: Vasil'yev, G. A.; Veselkin, A. P.; Yegorov, Yu. A.; Moiseyev, G. G.; Pankrat'yev, Yu. V.

ORG: None

TITLE: Attenuation of pile radiation in serpentinite sand

SOURCE: Atomnaya energiya, v. 19, no. 4, 1965, 354-359

TOPIC TAGS: nuclear reactor material, nuclear reactor shield

ABSTRACT: The use of serpentine rock for biological shielding is discussed. This mineral is found widely distributed in the Urals, Caucasus, Siberia and Kazakhstan, usually associated with asbestos deposits such as the Bazhenov quarries where pure serpentinite monoliths of about 1 cu m were excavated. Its bound water is liberated only at temperatures exceeding 450° C. Thus it can be used as a heat-resisting material for biological shielding. The concentration of hydrogen nuclei in serpentite being about 1.5% by weight, is quite sufficient for insuring the attenuation of fluxes composed of intermediate and fast neutrons. The density of monolithic serpentinite is about 2.6 ton/cu m while the thermal conductivity varies between 2.16 and 2.56 kcal/m.hr. C. This material could be easily cut. The compression strength of blocks made of serpen-

Card 1/3 UDC: 621.039.538.4

tinite reaches 600 kg/sq cm. The shielding properties of serpentinite fine sand (from Bazhenov deposits) were tested in a water-cooled and water-moderated research reactor. The boxes filled with sand were placed close to the core vessel. The maximum thickness was about 180 cm. The sand density was 1.62 ton/cu m. The chemical composition given in a table shows that the serpentite sand includes 38.83% of SiO_2 and 37.39% of MgO. The investigations were carried out assumming "semi-infinite" and "energy barrier" geometry. The method of induced activity was used for determining the neutron flux attenuation, while the gamma dose rate was measured by means of a scintillation dosimeter. The macroscopic cross-section for fast neutrons in sand was calculated as 0.0602 cm^{-1} of which 45% was due to oxygen and 21% to hydrogen. The variations of cross sections in serpentite and its main components for different levels of fast neutron energy was shown in a graph. The peaks and dips in curves reflected the dependence of cross-sections upon the presence of oxygen. The attenuation of fast neutrons calculated on the basis of threshold measurements is also graphically illustrated. From these graphs and a table, it follows that the relaxation of neutron in serpentite sand is the same as in boron carbide. The protective properties of serpentite monolithical blocks are considerably higher than those of iron ore concentrates and only slightly better than those of serpentinous concrete. The spectra of fast neutrons were also determined and the

L 28032-66

ACC NR: AP5026441 O

energy distributions at 0, 30, 60, 100 and 140-cm thickness were plotted for various values of neutron flux. The greatest changes were observed for energy levels from 3 to 8 Mev. The relaxation length varies from 14.9 to 17 cm. The flux attenuation for thermal and epithermal neutrons was also investigated. A certain accumulation of neutrons was observed at small serpentite thicknesses. The relaxation was about 15.2 cm. This length is smaller than that (about 20 cm) obtained for iron ore concentrates. The attenuation of dose rates of fast and intermediate neutrons was the same for tested layer thicknesses. The dose relaxation was 15.2 cm. The gamma dose attenuation was 22 cm for a serpentite layer of 270 g/sq cm. The experiments showed that the serpentite sand is as good as the boron carbide. In conclusion, it was stated that the serpentite is not as good as the iron ore concentrate, although the monolithic serpentite has a lower relaxation length. The serpentite shielding properties could be improved by using a mixture consisting of 25% of serpentite and 75% of iron. The full neutron dose relaxation will be about 9 cm. ORIG. art. has: 4 tables and 5 graphs.

SUB CODE: 18 / SUBM DATE: 29Jan65 / ORIG REF: 11 / OTH REF: 3

Card 3/3 cc

L 05043-67 EWT(m)/EWP(j)/EWP(t)/ETI IJP(c) JD/JR/GD/RM

ACC NR: AT6027927 SOURCE CODE: UR/0000/66/000/000/0120/0122

AUTHOR: Yegorov, Yu. A.; Orlov, Yu. V.; Pankrat'yev, Yu. V.

ORG: None

TITLE: Titanium removal cross section for a layer in a hydrogen-containing medium

SOURCE: Voprosy fiziki zashchity reaktorov (Problems in physics of reactor shielding); sbornik statey, no. 2. Moscow, Atomizdat, 1966, 120-122

TOPIC TAGS: particle cross section, titanium, neutron cross section, research reactor

ABSTRACT: Removal cross sections for titanium were measured in a water-water reactor of the swimming pool type. Sheets of titanium measuring 70×70 cm were placed near the reactor core with dimensions of 50×43×32 cm. The removal cross section was determined from the expression

$$N(r)G(r) = N(r-d)G(r-d)e^{-\Sigma_B d},$$

where $N'(r)$ is the neutron flux at distance r; $N'(r-d)$ is the neutron flux at the distance $(r-d)$ when there is no plate; Σ_B is the macroscopic removal cross section; d is the thickness of the plate and $G(r)$ is the experimentally determined correction factor

Card 1/2

L 05043-67
ACC NR: AT6027927 2

for geometric attenuation. The results show a removal cross section of 1.72±0.06 barns. The removal cross sections determined for detectors with various effective energy thresholds from 1.1 to 7 Mev coincide within the limits of experimental error. The minimum distance from the plate used for the removal cross section depends on the effective threshold of the detector. For neutrons with an effective energy of 1.5 Mev in polyethylene this distance is close to 15 cm. The distance decreases with an increase in the threshold. Orig. art. has: 3 tables, 4 formulas.

SUB CODE: 20,18/ SUBM DATE: 12Jan66/ ORIG REF: 006/ OTH REF: 001

Card 2/2 pla

L 05065-67 EWT(m)/EWP(t)/ETI IJP(c) JD/JR/GD/JH

ACC NR: AT6027937 SOURCE CODE: UR/0000/66/000/000/0198/0201

60
B+1

AUTHOR: Yegorov, Yu. A.; Panov, Ye. A.

ORG: None

TITLE: Experiments with plane slits of various configuration in radiation shielding 19

SOURCE: Voprosy fiziki zashchity reaktorov (Problems in physics of reactor shielding); sbornik statey, no. 2. Moscow, Atomizdat, 1966, 198-201

TOPIC TAGS: radiation shielding, lead, radiation source, radioisotope, cobalt, gamma radiation

ABSTRACT: The authors give comparative experimental data for the passage of radiation through plane slits of various shapes in the shielding of reactors and raliation sources. The results are compared with respect to the measured distribution of dose rate behind shielding with an air slit and a slit filled with aluminum. An isotropic Co^{60} source in the form of a plate measuring 250×250 mm was used in the experiment and the resultant γ-radiation was recorded by a scintillation gamma dosimeter located 40 mm from the shielding. The shielding studied was made up of lead units 90 mm thick with lateral dimensions of approximately 200 and 450 mm. Additional shielding around the source and the pickup was used to eliminate the effect of γ-radiation scattered from surrounding objects. Flat and staggered slits were studied as well as a combination

Card 1/2

L 05065-67

ACC NR: AT6027937

of the two configurations. The experimental results show that the integral increase in dose rate for the combination slit is equal within 20% to the sum of the relative dose rate (the ratio of the dose rate behind shielding with a slit to that behind the solid shield) for the plane and staggered slits. It is also shown that combinations of two staggered and one plane slit or two staggered slits give an increase in dose rate equal to the sum of the simple configurations. Orig. art. has: 2 figures, 1 table.

SUB CODE: 18/ SUBM DATE: 12Jan66/ ORIG REF: 001

Card 2/2

YEGOROV, Yu.D., inzh.; MAGARILLO, B.L., inzh.; POZIN, B.M., inzh.

Concerning the operation of tractors with mounted equipment.
Trakt. i sel'khozmash. 32 no.10:7-10 O '62. (MIRA 15:9)

1. Chelyabinskiy traktornyy zavod.
(Tractors)

YEGOROV, Yu. G

YEGOROV, Yu. G. -- "Material on the Epizootiology of Mulleriosis and Measures to Combat It in Leningrad Oblast." Min Higher Education USSR. Leningrad Veterinary Inst. Leningrad, 1955. (Dissertation for the Degree of Candidate in Veterinary Sciences).

So.: Knizhnaya Letopis', No. 2, 1956.

YEGOROV, Yu.G.

AKRAMOVSKIY, M.N., kandidat veterinarnykh nauk.; YEGOROV, Yu. G., kandidat veterinarnykh nauk.; BASHKIRTSEVA, Ye.V., veterinarnyy tekhnik.

Testing arsenic preparations in moniesiasis in lambs. Veterinariia 34 no.4:43-44 Ap '57. (MLRA 10:4)

1. Belorusskiy nauchno-issledovatel'skiy veterinarnyy institut.
(Lambs--Diseases and pests) (Tapeworms)

ZHARIKOV, Ivan Semenovich; YEGOROV, Yuriy Grigor'yevich; BOBKOVA. Anastasiya Fominichna; DOMASHEVICH, C., red.; YERMILOV, V., tekhn. red.

[Fascioliasis of farm animals and its control]Fastsiolez sel'skokhoziaistvennykh zhivotnykh i bor'ba s nim. Minsk, Sel'khozgiz BSSR, 1962. 63 p. (15:11)
(White Russia--Liver fluke)
(White Russia--Parasites--Domestic animals)

GOREGLYAD, Kh.S., akademik; SHIKHALEYEV, N.F.; MORDASOV, P.M., kand. veterin.nauk; BITYUKOV, P.A., kand.veterin.nauk; BOBKOVA, A.F., kand.veterin.nauk; YEGOROV, Yu.G., kand.veterin.nauk

Materials on anaplasmosis acquired from vaccinations in cattle in the Glusk District of the White Russian S.S.R. Trudy NIVI 1:72-89 '60. (MIRA 15:10)

1. AN Belorusskoy SSR i Akademiya sel'skokhozyaystvennykh nauk Belorusskoy SSR (for Goreglyad).
(Glusk District--Anaplasmosis) (Vaccination)

YEGOROV, Yu.G., kand.veterin.nauk

Biology of the lungworm, Muellerius capillaris. Trudy NIVI 1:160-170 '60. (MIRA 15:10)
(Lungworms)

YEGOROV, Yu.G., kand.veterin.nauk; MOROZOV, I.G., veterinarnyy vrach

Therapy of dictyocaulosis and myelleriosis of sheep using ditrazine. Trudy NIVI 1:174-178 '60. (MIRA 15:10)
(Anthelmintics) (Lungworms) (Veterinary helminthology)

YEGOROV, Yu.G., kand.veterin.nauk; BOBKOVA, A.F., kand.veterin.nauk

Therapy of monieziasis of calves using calcium arsenate. Trudy NIVI 1:171-173 '60. (MIRA 15:10)
(Calcium arsenate) (Veterinary helminthology)

YEGOROV, Yu.L.

Raman spectra of organic silicon, germanium, and tin compounds with allylic radicals. Izv. AN SSSR. Otd. khim. nauk no.1:124 Ja '57. (MIRA 10:4)

1. Institut organicheskoy khimii im. N.D. Zelinskogo Akademii nauk SSSR.
(Organics silicon compounds--Spectra)
(Germanium organic compounds--Spectra)
(Tin organic compounds--Spectra)

L 20941-66 EWP(e)/EWT(m)/EWP(t)/EWP(k) JD

ACC NR: AP6002605 (A) SOURCE CODE: UR/0286/65/000/023/0104/0104

AUTHORS: Polyak, D. G.; Yegorov, Yu. I.; Shereshev, N. A.

28
B

ORG: none

TITLE: A device for the automatic control of an electromagnetic powder clutch of an automobile. Class 63, No. 149311

19 17

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 23, 1965, 104

TOPIC TAGS: electromagnetic device, clutch, automatic control equipment

ABSTRACT: This Author Certificate presents a device for the automatic control of an automobile electromagnetic powder clutch. The device, including a relay and a resistor, simplifies the mechanism construction. The relay has three windings. One of the relay windings is connected to the generator armature, the second to the shunt winding of the generator, and the third to the winding of the armature which automatically disengages the supplementary resistance of the winding circuit of the clutch when the motor reaches a specified rpm.

SUB CODE: 13/ SUBM DATE: 05May60

Card 1/1 FW

., Z. I., Ed., Professor

...ya redkikh metallov (Toxicology of Rare Metals) ...
...sk, 1963. 335 p. 1500 copies printed.

... R. S. Khamidullin; Tech. Ed.: Yu. S. Bol'chikova.

... provide information on the toxic effects of rare ...

... The chemistry and industrial applications of rare met...
... symbols are discussed. The clinical picture and
... of rare-metal poisoning is also given. There are 3...

... Effect on an Organism of
... Dispersed, and Other Metals Used in Industry and
... Their Compounds.
Molybdenum. O. Ya. Mogilevskaya
Tungsten N. N. Mezentseva
... Mezentseva et al
Zirconium. O. Ya. Mogilevskaya
Vanadium. I. V. Roshchin
... Yu. L. Yegorov
... Yu. L. Yegorov
... S. ... Sandratskaya
... and its compounds. R. S. Vorob'yeva 135

SOV/137-58-7-16217

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 7, p 330 (USSR)

AUTHOR: Yegorov, Yu. L.

TITLE: Data on the Hygienic Character of the Dust of the Rare Metals Tantalum and Niobium (Materialy k gigiyenicheskoy kharakteristike pyli redkikh metallov - tantala i niobiya)

PERIODICAL: Gigiyena truda i prof. zabolevaniya, 1957, Nr 6, pp 16-22

ABSTRACT: The study of the character and degree of toxic action of Ta and Nb showed that: 1) The dust of Ta, Nb, and their compounds forming in industry (powder metallurgy) is highly dispersable, insoluble (Ta) or almost insoluble (Nb) in liquid mediums with the pH close to that of biological mediums. 2) Ta entering the gastro-intestinal tract is almost completely eliminated by the intestines during the first few days. Its resorption through the intestinal tract is not observed. 3) The total toxic action of Ta and Nb compounds is weak, which fact is evidently explained by the very low solubility of Ta. 4) The action of the dust of the materials studied on the pulmonary tissue (on respiratory entry and intra-tracheal introduction) differs depending upon the type of the dust. There are reasons for the assumption of the possibility of development of

Card 1/2

Data on the Hygienic Character of the Dust (cont.)

the fibrous process in the lungs upon the prolonged inhalation of the dusts of these compounds. 5) Processes related to the evolution of the dust demand the application of dust removing devices.

1. Tantalum--Toxic effects 2. Niobium--Toxic effects 3. Tantalum Ye. L. --Physiological effects. 4. Niobium--Physiological effects

Card 2/2

YEGOROV, YU. L.

SOV/137-58-8-18209D

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 8, p 286 (USSR)

AUTHOR: Yegorov, Yu. L.

TITLE: Data on the Hygienic Character of Industrial Dust of the Rare Metals Tantalum and Niobium (Materialy po gigiyenicheskoy kharakteristike proizvodstvennoy pyli redkikh metallov - tantala i niobiya)

ABSTRACT: Bibliographic entry on the author's dissertation for the degree of Candidate of Medical Sciences, presented to the 1-y Mosk. med. in-t (First Moscow Medical Institute), Moscow, 1958

ASSOCIATION: 1-y Mosk. med. in-t (First Moscow Medical Institute), Moscow

1. Particles (Airborne)--Physiological factors
2. Tantalum--Physiological factors
3. Niobium--Physiological factors

Card 1/1

YEGOROV, Yu. L.

Review of certain dissertations in the field of industrial hygiene published in the period 1949-1957. Gig. i san. 23 no.12:49-53 D '58. (MIRA 12:1)

1. Iz kafedry gigiyeny truda I Moskovskogo ordena Lenina meditsinskogo instituta imeni I.M. Sechenova.

(INDUSTRIAL HYGIENE
in Russia, review (Rus))

YEGOROV, Yu.L.

Materials on the toxicology of tantalum. Trudy 1-go MMI 5:19-27 '59. (MIRA 13:8)

1. Iz kafedry gigiyeny truda (zav. - prof. Z.I. Izrael'son) 1-go Moskovskogo ordena Lenina meditsinskogo instituta im. I.M. Sechenova.

(TANTALUM--TOXICOLOGY)

KASPAROV, A.A.; YEGOROV, Yu.L.

Data on the hygienic assessment of the production of synthetic fatty acids. Gig.i san. 25 no.7:36-42 Jl '60. (MIRA 14:5)

1. Iz Moskovskogo nauchno-issledovatel'skogo instituta sanitarii i gigiyeny imeni F.F Erismana Ministerstva zdravookhraneniya RSFSR.
(FATTY ACIDS) (CHEMICAL INDUSTRIES—HYGIENIC ASPECTS)

DROGICHINA, E.A.; RASHEVSKAYA, A.M.; YEVGENOVA, M.V.; ZORINA, L.A.; KOZLOV, L.A.; KUZNETSOVA, R.A.; RYZHKOVA, M.N.; SENKEVICH, N.A.; SOLOV'YEVA, L.V.[deceased]; SHATALOV, N.N.; LETAVET, A.A., prof., red.; YEGOROV, Yu.L., red.; BUL'DYAYEV, N.A., tekhn. red.

[Manual on periodic medical examinations for industrial workers] Posobie po periodicheskim meditsinskim osmotram rabochikh promyshlennykh predpriiatii. By E.A.Drogichina i dr. Moskva, Medgiz, 1961. 287 p. (MIRA 14:12)

(INDUSTRIAL HYGIENE)

YEGOROV, Yu.L.; KASPAROV, A.A.

Some problems of hygiene arising in the production of synthetic fatty acids and higher aliphatic alcohols. Uch.zap. Mosk. nauch. issl. san. i gig. no.9:34-39'61 (MIRA 16:11)

YEGOROV, Yu.L.; KASPAROV, A.A.; ZAKHAROV, V.M.

Materials concerning the toxicology of synthetic fatty acids.
Uch. zap. Mosk. nauch.-issl. inst.san. i gig. no.9:40-46 '61
(MIRA 16:11)

YEGOROV, Yu.L.; KASPAROV, A.A.; PUSHKINA, N.N. (Moskva)

Some disorders in metabolic and functional processes of the liver among workers in the production of synthetic fatty acids. Gig. truda i prof.zab. no.11:19-22 '61. (MIRA 14:11)

1. Moskovskiy nauchno-issledovatel'skiy institut gigiyeny imeni F.F. Erismana.
(LIVER--DISEASES) (ACIDS, FATTY--TOXICOLOGY)

YEGOROV, Yu.L., kand.med.nauk

Problems in labor hygiene at the First All-Russian Congress of Hygienists and Sanitary Physicians. Gig.i san. 26 no.3:103-106 Mr '61. (MIRA 14:7)

1. Iz Moskovskogo nauchno-issledovatel'skogo instituta gigiyeny imeni F.F.Erismana.

(INDUSTRIAL HYGIENE)

KLIMOVA, T.Kh.; LORANSKIY, D.N.; YANKOVSKAYA, Z.V.; YANIN, L.V., red.; YEGOROV, Yu.L., red.; MIRONOVA, A.M., tekhn. red.

[Collection of the most important official data on problems of industrial hygiene and industrial sanitation] Sbornik vazhneishikh ofitsial'nykh materialov po voprosam gigieny truda i proizvodstvennoi sanitarii. Moskva, Medgiz. No.1. 1962. 314 p. (MIRA 15:10)

(INDUSTRIAL HYGIENE—LAW AND LEGISLATION)

ACC NR: AT6007147 (N) SOURCE CODE: UR/3148/60/000/004/0042/0047

AUTHOR: Lipskaya, N.V.; Deniskin, N.A.; Yegorov, Yu.M.; Shel'ting, V.P.

ORG: None

TITLE: A stationary microvariational station with photomultiplication

SOURCE: AN SSSR. Mezhduvedomstvennyy geofizicheskiy komitet. III razdel programmy MGG: Geomagnetizm i zemnyye toki. Sbornik statey, no. 4, 1960, 42-47

TOPIC TAGS: geomagnetic instrumentation, magnetometer, recording precision magnetometer, GEOMAGNETIC MEASUREMENT

ABSTRACT: This paper is a description of a sensitive precision magnetographic station for continuous recording of three geomagnetic variation components. The magnetometers have a resolving power of a few thousandth gamma, at frequencies to 1c/sec. The sensor is a low inertia (under .001 gm.cm^3) quartz torsion balance, with a moving magnet attached to a light mirror. Oscillations of a reflected light beam are converted into a photocurrent, intesified by a photomultiplier and amplified to drive a recorder. Output is on paper, with 1mm equivalent to .005 gamma. Constant field compensation is provided by magnets and Helmholz coils. Special coils supply noise suppression feedback and stabilize the sensitivity. Automatic range switching and a central control and sensitivity monitoring unit are provided. Orig. art. has 4 figures

SUB CODE: 08/ SUBM DATE: None/ ORIG REF: 003

Card 1/1

89754

3,9100

S/169/61/000/002/007/039
A005/A001

Translation from: Referativnyy zhurnal, Geofizika, 1961, No. 2, p. 3, # 2G16

AUTHORS: Deniskin, N. A., Yegorov, Yu. M., Lipskaya, N. V., Osinskaya, S. V., Kheresko, G. V., Shel'ting, V. F.

TITLE: A Magnetic Station With a Quartz Microvariometer

PERIODICAL: V sb.: "Vozmushcheniya elektromagnitn. polya Zemli". Moscow, AN SSSR, 1960, pp. 57-62 (English summary)

TEXT: It is reported on the development and designing of a magnetic micro-variation station on the basis of the low-inertial quartz variometer which was proposed by V. F. Shel'ting (see abstr. No. 2G15). The station is intended for continuous recording of the variations of all three components of the Earth's magnetic field with amplitudes of the order of 10^{-7} oe and more, and duration of from 1 sec. to many minutes. The equipment consists of three main assemblies: 1) the microvariometers of X, Y, Z; 2) the photographic recorder with 200 mm in paper width and 90 mm/hr in speed, which has also a device marking the time; 3) an automatic band switch relay operated by two photoresistances and permitting the rays to return in jump onto the phototape after reflection from the microvariometer

Card 1/2

89754

A Magnetic Station With a Quartz Microvariometer

S/169/61/000/002/007/039
A005/A001

mirror in case of its departure from the tape under the effect of an intense variation of the field. If operating with the automatic banswitch relay, large angular deflections of the moving system of the responsive element are excluded, which is important for the stabilization of the graduation value. As a result of the tests of the station, which were conducted in autumn 1957, it turned out that: 1) the moment of inertia of the moving system is equal to 10^{-5} g cm^2; 2) the natural periods of the oscillations of the different variometers lie within the limits of $T_o \approx 1 - 2$ sec at a graduation value of the order of $\varepsilon \approx 0.05\gamma$/arc minute; 3) the magnetic moments of the moving magnets amount to about m = 0.5-1 electromagnetic units; 4) the shape of the frequency characteristic of the device testifies that the graduation value is constant for all periods longer than two or three seconds and does not depend on the period of the perturbing force; 5) the amplitude characteristic is linear within the limits of the scale width. There are 7 references.

U. Fastovskiy

Translation from: This is the full translation of the original Russian abstract.

Card 2/2

40226
S/169/62/000/007/076/149
D228/D307

3.9110

AUTHORS: Lipskaya, N. V., Deniskin, N. A. and Yegorov, Yu. M.

TITLE: Constructing electromagnetic sounding curves from the data of observing microvariations in the earth's natural electromagnetic field

PERIODICAL: Referativnyy zhurnal, Geofizika, no. 7, 1962, 33-34, abstract 7A218 (V sb. Vopr. teorii i praktiki elektrometrii, M., AN SSSR, 1961, 41-55)

TEXT: The study of variations in the earth's natural electromagnetic field and the determination of the quantitative correlations between its magnetic and electric components underlie the magnetotelluric method. This provides the possibility of establishing the relationship between the field's recorded values and the geologic structure of ground at the point of observation. It is noted that the magnetotelluric method differs from other electric prospecting methods in the absence of an artificial field source, in the great depth of propagation of the natural field variations, and in

Card 1/4

the simultaneous recording of electric and magnetic variations on the requisite frequency band. This enables the whole frequency sounding curve to be constructed from observations made at one point. The depth of propagation of the natural field variations grows as the period of the variations increases; therefore, the frequency band of the recorded variations determines the equipment's field of application. There are induction-type installations and equipment, based on the magnetostatic principle. The field quartz microvariation station of the Institut fiziki Zemli AN SSSR (Institute of Physics of the Earth, AS USSR) is described. The station is suitable for continuously recording the three magnetic field components H_x, H_y, and H_z in the frequency range from 1 to several thousand parts of a hertz. It consists of a receiving part (microvariometer, clarifier, photomultiplier); and control, recording, and power-supply panels, placed 30 m from the receiving part. Tests of the apparatus confirmed that there is a linear relationship between the amplitude of the changes in the magnetic field acting on the microvariometer and the values of the recorded

photocurrent. The current recording curve is reproduced on a certain scale without greatly distorting the curve for the microvariations of the measured field components with a variational range of up to 2 - 3γ and with periods, varying from 3 sec to several minutes. The ratio of the ranges of variations, recorded by two installations, remains constant with a precision of up to 4 - 8%. The amplitude and phase characteristics of the field equipment are cited, as are vector diagrams, characterizing the instantaneous positions and the magnitude of the horizontal components of the magnetic and electric field vectors for the variations with periods of T equalling 32 and 210 sec. The authors consider examples of the recording of electromagnetic field variations at two points of the Dneprovsko-Donetskaya Depression with known geologic sections. When constructing the frequency sounding curves ratios were calculated for the amplitudes of the variations of two mutually perpendicular components of the electric and magnetic fields; these were recorded at the same moment of time and have an identical period. The impedance was determined from the formulas:

$$\rho_K = \frac{T}{5}\left|\frac{E_x}{H_y}\right|^2 \quad \text{and} \quad \rho_K = \frac{T}{5}\left|\frac{E_y}{H_x}\right|^2$$

The experimental curves of ρ_K were compared with the theoretical curves of self-potential field electrosounding for a three-layer medium; these latter curves were calculated for $\mu = \rho_2/\rho_1 = 16$ and 32, $v = h_2/h_1 = 1.0$ and 1.5, $\rho_3 = \infty$, $h_3 = \infty$. The comparison gave satisfactory results. It is noted that despite the equipment's ability to record microvariations with periods of down to 1 sec, no variation with a period of below 10 sec was recorded in the operations. The value T = 10 sec appears to be the boundary of a certain unique "absorption band", whose authenticity of existence can only be confirmed by subsequent observations. [Abstracter's note: Complete translation.]

Card 4/4

LIPSKAYA, N.V.; DENISKIN, N.A.; YEGOROV, Yu.M.

Results of electromagnetic sounding in the central area of the Dnieper-Donets Depression. Izv. AN SSR. Ser. geofiz. no. 3:407-411 Mr '61. (MIRA 14:2)

1. Institut fiziki Zemli AN SSSR.
(Komarovka Region (Chernigov Province)--Electromagnetic prospecting)